

United States Patent [19]

Glavish et al.

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[54] ACCELERATOR FOR ION IMPLANTATION

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[52] U.S. Cl. 250/492.2; 328/233; 313/360.1

[58] Field of Search 250/492.2; 328/233; 313/359.1, 360.1

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[57] ABSTRACT

A radio frequency (rf) ion accelerator. A beam of ions enters the accelerator with a low initial velocity. Ions are accelerated to energies on the order of 1 mev per charge state for use in deep ion implantation of semiconductor materials. The accelerator is constructed from multiple stages or cells with each cell including an accelerating electrode coupled to an rf resonant tank circuit. The phase of the tank circuit oscillation is controlled to take into account the mass, charge, and initial velocity of the ion. After traversing the multiple cells, a focused beam of ions is directed to a workpiece.

17 Claims, 9 Drawing Figures

